



INSTRUCTIONS FOR USE PERSONAL PROTECTIVE EQUIPMENT (P.P.E.)

Read these instructions carefully before using this clothing. Refer to your safety engineer or manager regarding the appropriate clothing for your specific work situation. Keep these instructions carefully so you can refer to them whenever you wish.

Declaration of conformity for this P.P.E. and more comprehensive instructions for use: see <http://sio.to/eudoc>



This item complies with the fundamental requirements of European Regulation 2016/425 on personal protective equipment (P.P.E.) based on European harmonised standard(s); you will find corresponding pictograms and protection classes on the label sewn into this garment.



This item complies with the fundamental requirements of the Personal Protective Equipment Regulations (Regulation (EU) 2016/425) as they apply in GB, as amended, based on designated standard(s) and/or technical specification(s);

Except for clothing that is only labelled EN 343 and/or EN 14058 and/or EN 13758-2 (and is covered by self-certification, with exception of $R_{ct} > 0.25 \text{ m}^2 \text{ K/W}$), all our other P.P.E. covered by this manual has been certified by Centexbel, Technologiepark 70, B-9052 Zwijnaarde (Belgium) - NB 0493. Clothing covered by this manual that is labelled with the UKCA pictogram has been certified by approved body Centexbel International Ltd., 8 Northumberland Avenue, London WC2N 5BY, UK - AB 8515. If this number 0493 or 8515 is shown on the right next to the CE or UKCA pictogram on the label sewn into the garment, it means that it is category III P.P.E. of a complex design that is to protect the user against hazards which are fatal or which can seriously and irreparably impair one's health, and the quality assurance monitoring of the manufacturing process is carried out by Centexbel.

This P.P.E. complies with General Standard EN ISO 13688:2013 / EN ISO 13688:2013+A1:2021. This P.P.E. complies with the REACH Regulation and does not contain any substances known at this time to cause allergic reactions or which are known to be carcinogenic or mutagenic. As with all

P.P.E., this product does not protect you against all risks! Check your specific risk assessment.

This P.P.E. will also be worn combined with other P.P.E. (including non-clothing P.P.E.). Check the compatibility and correct use when combined with other P.P.E.. Read the manuals of other P.P.E. as well.

With regard to protection against rain, cold, chemicals, fire, heat, etc. it is self-evident that you will only be protected on the parts of the body covered by the P.P.E. when performing activities and movements. As it is possible to combine different garments, you need to ensure that all parts of the body are covered with the appropriate levels of protection.




Making alterations to this clothing (without authorisation from Sioen) is not permitted! For optimum and compliant protection, you need to close all fasteners.

Never wear a damaged garment. A damaged garment must be taken out of use immediately and either repaired or replaced. Notify your manager at once. At 'end of life', this garment must be collected, removed and processed in controlled conditions (professional collection service for mechanical or thermal recycling, etc.) in a specialised facility. Sioen has no obligation or responsibility for taking back the P.P.E. for safe disposal.

We recommend professional care (via an in-house or external laundry). Specific care instructions for commercial laundries are available from Sioen upon request or on the Sioen website <http://sio.to/eudoc>. Care instructions for domestic laundering (which can also be done at a commercial laundry!) appear on the label sewn into the garment.

You will find a more detailed explanation of these symbols on the Sioen website <http://sio.to/eudoc>.

Please contact your Sioen dealer in all cases for more information about care instructions, repairs and safe destruction methods.

Label	Clarification
MAX	Maximum (theoretical) number of cleaning cycles means certification testing to be carried out after x cleaning cycles.
	Expiry date or 'do not use after' date.
	Certification tests carried out after an industrial laundry process (see http://sio.to/eudoc).
	The values entered in A, B, C are the corresponding body measurements (in cm) for which this garment is suitable. You will find the various sizing tables on our website see http://sio.to/eudoc . (A: Waist girth - B: Chest girth - C: Length)

Do not allow your garment to become too soiled. **Soiled clothing can result in reduced protection.** Chemicals (including their long-term effect due to clothing being put away soiled) can impair the protective properties of the clothing.

When picking up your clothing check that you have the right size and that there is no visible damage in evidence.

As a general rule, garments should be selected in such a way that the work can be carried out comfortably and unhindered.

Manufacturing traceability

The requisite details are shown at the bottom of the label.

Storage instructions

When you are not wearing the garment, you should store it dry, uncompressed, in a well-ventilated room. Avoid extreme temperatures and avoid direct sunlight to prevent colour changes. Complaints about colour changes will not be considered.

Sioen cannot be held liable for damage occurring as a result of improper use of the P.P.E. or any use that does not comply 100% with the instructions for use set out above.

EN 343:2019

Protection against rain



EN 343

Protective clothing with reference WR x, y, R

<u>x or y</u> (See label)	x: Resistance to water penetration (m)	y: Water vapour resistance (Ret: m².Pa/W)
Class 1	≥ 0.8	> 40
Class 2	≥ 0.8*	25 < Ret ≤ 40
Class 3	≥ 1.3*	15 < Ret ≤ 25
Class 4	≥ 2*	≤ 15

(*) Water column, fabric tested after pre-treatment.

R = Readymade garment rain tower test, optional (replaced with 'x' when not been tested).

For clothing with y: class 1 the recommendation 'Restricted wearing time' has to be mentioned on the label. The table below is an indication of the recommended wearing time at different temperatures. Wearing time can be extended by the use for instance of ventilation apertures, etc.

Working environment temperature	25 °C	20 °C	15 °C	10 °C	5 °C
Max. recommended continuous wearing time	60 min	75 min	100 min	240 min	N/A

Water vapour permeability, a combination of modular multilayer clothing (e.g. underclothing with moisture-absorbing and wicking properties, thermal insulation), ergonomic factors (fit, size, elasticity, etc.) contribute towards your comfort.

Note: For models with detachable sleeves, waterproofing may be reduced at the level of the zipper for zip-up of the sleeves.

EN 343:2003 +A1:2007 Protection against rain



Protective clothing with reference WR x, y

<u>x or y</u> (See label)	x: Resistance to water penetration (m)	y: Water vapour resistance (Ret: m².Pa/W)
Class 1	≥ 0.8	> 40
Class 2	≥ 0.8*	20 < Ret ≤ 40
Class 3	≥ 1.3*	≤ 20

(*) Water column, fabric tested after pre-treatment.

For clothing with y: class 1 the recommendation 'Restricted wearing time' has to be mentioned on the label. The table below is an indication of the recommended wearing time at different temperatures. Wearing time can be extended by the use for instance of ventilation apertures, etc.

Working environment temperature	25 °C	20 °C	15 °C	10 °C	5 °C
Max. recommended continuous wearing time	60 min	75 min	100 min	240 min	N/A

Water vapour permeability, a combination of modular multilayer clothing (e.g. underclothing with moisture-absorbing and wicking properties, thermal insulation), ergonomic factors (fit, size, elasticity, etc.) contribute towards your comfort.

Note: For models with detachable sleeves, waterproofing may be reduced at the level of the zipper for zip-up of the sleeves.

Seasonal protective clothing - Protection against water



This pictogram **without** any mention of [EN 343](#) standard indicates seasonal protective clothing (self-certification) with basic protection against light rain and drizzle and with seams which are not necessarily made waterproof.

EN ISO 20471:2013 +A1:2016

This clothing makes the user stand out where visibility is poor in high-risk situations



EN ISO 20471

The combination of a fluorescent base material with retroreflective strips signals your presence in daylight or in the dark (in the light from headlamps) respectively.

Protective clothing with reference HRVx

<i>x (See label)</i>	Fluorescent (m ²)	Retroreflective (m ²)
Class 1	≥ 0.14	≥ 0.10
Class 2	≥ 0.50	≥ 0.13
Class 3	≥ 0.80	≥ 0.20

The garment must be fully closed and must not be covered in order to ensure visibility.

Visibility is dependent on use (e.g. soiling, etc.) care (repairs, cleaning, etc.) and storage (to be stored preferably in a dark environment). The maximum permissible number of care cycles is shown on the label as 'Max xx' (this is an indication of the number of laundry cycles after which certification has been carried out) but this is not the only factor that will determine the lifespan of the garment. The lifespan will also depend on use, care, storage conditions, etc. Caution is advised when laundering together with other dark garments (risk of colourstaining). After exposure to light, the colour may fall in a different colour area from the original, however the colour will then still comply with [EN ISO 20471](#).

For P.P.E. with removable sleeves its class may (will) be lower with the sleeves unzipped (see label). A sleeveless [EN ISO 20471](#) Class 3 garment must be combined with a garment which has long sleeves and/or long trouser legs with 2 retroreflective strips 5 cm wide and a minimum of 5 cm of fluorescence all around the sleeves and/or trouser legs respectively.

EN ISO 20471 - Except § 5.6

This clothing provides the user protection against insignificant visibility by means of conspicuous materials, in accordance with EN ISO 20471:2013+ A1:2016, with the exception of §5.6. - Physiological performance - Water vapour and thermal resistance.

The garment has restricted wearingtime



This garment does not comply with clause 5.6 of the standard *EN ISO 20471:2013+A1:2016*, which meets minimum performance to physiological performances such as water vapour and thermal resistance. Therefore, the clothing has a limited wearing time. A recommendation is added in the clothing "Restricted wearing time". The following table is a guide to illustrate the effect of water vapour permeability on the recommended continuous wearing time of a garment in different ambient temperatures.

Temperature of working environment (°C)	25	20	15	10	5
Recommended max continuous wearing time (min.)	60	75	100	240	NA

EN 14058:2017

Protection against cool environments (possible combination of humidity and wind at temperatures not lower than -5 °C)



Protective clothing with reference LC a, b, c, d

- a Thermal resistance R_{ct} measured on fabric combination: class 1 to 4. (see label)
- b Optional: air permeability class: classes 1 to 3. (see label)
- c Optional for a = 1, 2 or 3: resultant effective thermal insulation value I_{cler} (in $m^2 \cdot K/W$), measured dynamically on clothing combined with type R underclothing item code (see label for value).
- d Optional: resistance to water penetration > 0.8 m water column.

An 'X' on the label means that this optional property has not been tested.

	a: R_{ct} ($m^2 \cdot K/W$)	b: Air permeability AP (mm/s)
Class 1	$0.06 \leq R_{ct} < 0.12$	$100 > AP$
Class 2	$0.12 \leq R_{ct} < 0.18$	$5 < AP \leq 100$
Class 3	$0.18 \leq R_{ct} < 0.25$	$AP \leq 5$
Class 4	$0.25 \leq R_{ct}$	/

For the intended field of use of classes 1 to 4 inclusive, see tables on Sioen website:
<http://sio.to/eudoc>

Thermal insulation can decrease after laundering or due to compression. This gar-

ment protects only those parts of the body that are covered by the garment. For complete protection, the entire body including arms and legs needs to be covered. A bodywarmer or waistcoat only provides supplementary protection.

EN 342:2017

Protection against cold environments (possible combination of humidity and wind at temperatures below -5 °C)



EN 342

Protective clothing with reference DF

- a Resultant effective thermal insulation value I_{cler} (in $m^2.K/W$), measured dynamically on clothing combined with type B underclothing. (or alternatively type C or R underwear, see label for value)
- b Air permeability: classes 1 to 3. (see label)
- c Optional: WP means 'Resistance to waterpenetration' > 0.8 m water column.

An 'X' on the label means that this optional property has not been tested.

	b: Air permeability AP (mm/s)	Application: air speed
Class 1	$100 < AP$	$< 1 \text{ m/s}$ indoors
Class 2	$5 < AP \leq 100$	$< 5 \text{ m/s}$
Class 3	$AP \leq 5$	$\geq 5 \text{ m/s}$, typical for outdoors

You locate the I_{cler} value (in $m^2.K/W$), which you can read off the label, in the left-hand column in the table below. In the corresponding row to the right of it you will find an indication of the minimum temperature in °C (corrected for wind chill) for various activity levels and air speeds to which one can be exposed for 1 or 8 hours (provided it is worn with the corresponding underclothing). Over-insulation should also be avoided, as should perspiration. In order to benefit from optimum protection in your specific work situation, it needs to be interspersed with adequate breaks in a heated room, in which this P.P.E. should preferably be (partially) removed or opened.

	Wearer: Standing			
Insulation	Light activity, 75 W/m ²			
	Air speed			
	0.4 m/s		3 m/s	
	8 h	1 h	8 h	1 h
0.265 m ² .K/W	13	0	19	7
0.310 m ² .K/W	10	-4	17	3
0.390 m ² .K/W	5	-12	13	-3
0.470 m ² .K/W	0	-20	7	-9
0.540 m ² .K/W	-5	-26	4	-14
0.620 m ² .K/W	-10	-32	0	-20

	Wearer: moving							
Insulation	Light activity, 115 W/m ²				Moderate activity, 170 W/m ²			
	Air speed				Air speed			
	0.4 m/s		3 m/s		0.4 m/s		3 m/s	
	8 h	1 h	8 h	1 h	8 h	1 h	8 h	1 h
0.265 m ² .K/W	3	-12	9	-3	-12	-28	-2	-16
0.310 m ² .K/W	-2	-18	6	-8	-18	-36	-7	-22
0.390 m ² .K/W	-9	-28	0	-16	-29	-49	-16	-33
0.470 m ² .K/W	-17	-38	-6	-24	-40	-60	-24	-43
0.540 m ² .K/W	-24	-45	-11	-30	-49	-71	-32	-52
0.620 m ² .K/W	-31	-55	-17	-38	-60	-84	-40	-61

Additional measures may need to be taken for applications below -50°C (respiratory protection, skin protection, etc.)!

Thermal insulation can decrease due to laundering or compression. A freezer jacket, trousers and hood plus corresponding underclothing must always be worn together in order to meet the above specifications.

Info: Type B underwear: long-sleeve T-shirt, long underpants, socks, felt slippers, thermal coat, thermal trousers, knitted gloves and balaclava with this P.P.E. as the outer layer. Specific information about type C underwear can be found on the Sioen website: <http://sio.to/eudoc>.

EN 13758-2:2003 +A1:2006

Protects the user against UV radiation (UVA + UVB) from the sun



EN 13758-2

Protective clothing with reference UPF

UPF (ultraviolet protection factor) must be at least 40 and is to be measured in accordance with [EN 13758-1](#). This clothing only protects the parts of the body which are covered. Exposure to the sun for long periods can cause serious damage to your skin. Accordingly, use a high-factor sun cream on parts not covered. The protective factor of this clothing can be reduced through use, when taking it off or when wet.

EN ISO 14116:2015

Clothing with limited flame spread properties



EN ISO 14116

Protective clothing which may have reference FR 1+3, FR1 or FR3

This clothing offers passive protection (reducing the likelihood of the clothing itself igniting and thus constituting a risk itself) against accidental and momentary contact with small flames.

Index 1 shall not be worn next to the skin and must be worn over index 2 or index 3 clothing. Index 2 and index 3 clothing with an index 1 material applied on the inside (which is shown on the label) also requires to be worn over index 2 or Index 3 underclothing. Make sure that for index 1 garments you also wear an index 2 or index 3 underclothing at the level of the neck, wrists, ankles,... so that you do not have contact with the skin of the index 1 material. The clothing can consist of a single layer or a multilayer assembly.

Index x: single layer: outside tested
or multilayer: inside and outside tested together.

Index x+x: multilayer, each layer is to be tested separately;
(e.g. FR 1 + 3 means index 1 outer layer and index 3 inner layer).

As shown in this illustration.

Ext.: Index 1



Int.: Index 3

X	Flame reaches sample edges ?	Hole formation in specimen ?	Afterglow spread from the carbonized area ?	Flaming debris ?	Afterflame time ?
Index 1	No = limited flame spread	Yes	No	No	No requirement
Index 2	No = limited flame spread	No	No	No	No requirement
Index 3	No = limited flame spread	No	No	No	≤ 2 sec

In the event of exposure to flames, distance yourself as quickly as possible from the flame / heat source. Thermally conductive components shall not come into contact with skin. Where protection is provided by an outer two-piece suit, overlap of at least 20 cm shall be maintained on a wearer when attempting to touch his/her toes with the

fingertips while standing.

Dirt residues of flammable substances on the clothing (e.g. oil, etc.) have an adverse effect on limited flame spread.

EN 1149-5:2018

Electrostatic clothing to be used as part of a fully earthed system, in order to prevent accidental discharges constituting a fire hazard in an explosive atmosphere (ATEX environment; Zones 1, 2, 20, 21 and 22 where the minimum ignition energy is not less than 0.016 mJ).



EN 1149-5

Protective clothing with reference AS

This P.P.E. is part of a fully anti-static and earthed system. Anti-static protective clothing can consist of a one-piece garment (coveralls) or several garments (jacket, trousers, body warmer, etc.) and is required at all times to cover all non-compliant (non-static dissipative) materials (e.g. underclothing) fully (even while moving, bending over, etc.) and overlap sufficiently (e.g. jacket/trouser suit)! For instance, an EN 1149-5-compliant thermal or high-visibility waistcoat, etc. must be worn over other anti-static garments. Only the outer layer of an individual multilayer garment must have anti-static properties.

Wearers of this P.P.E. require to be earthed at all times in order to dissipate electrostatic charges. Contact must therefore be provided between the wearer's conductive fabric and conductive footwear (EN 20344). The electrical resistance between the wearer and earth must be less than $10^8 \Omega$ (beware of insulated or heavily soiled floors). Anti-static properties cannot be adequately guaranteed when working on electrical systems where electrically insulating footwear is required.

This garment must be put on before entering the ATEX environment. It must be fully fastened and existing constricting systems (e.g. at the ends of sleeves) require to be fitted in order to provide adequate contact with the skin or conductive underwear. The hook and loop parts of touch and close fastenings must overlap completely and be pressed together firmly. Clothing must not be unfasten or removed in the ATEX environment and removable parts (e.g. name badges, shoulder pads, etc.) must not be removed from the garment.

All conductive metal parts require to be fully covered in use by anti-static material (e.g. a belt with a metal buckle must not be worn with trousers provided with loops if it is not covered by a jacket).

Anti-static clothing must not be used in an oxygen-enriched atmosphere or in a zone 0 without prior approval from the safety engineer in charge! Electrostatic properties may decline during use and due to cleaning, soiling, etc. Changes to the style are not permitted.

EN ISO 11612:2015

Protective clothing with limited flame spread and protection against industrial heat



EN ISO 11612
a b c d e f

Protective clothing with reference FAxBxCxDxExFx

Limited flame spread: A1: Surface ignition and/or A2: bottom-edge ignition.

Limited flame spread, afterflame time and afterglow time ≤ 2 s, no hole formation, no flaming or molten debris.

This standard defines the following heat transmission performance aspects (the limits are based on avoiding second-degree burns).

Convective heat (flame) HTI24 Index		
	Min.	Max.
B1	4 s	< 10 s
B2	10 s	< 20 s
B3	20 s	

Radiant heat 20 kW/m ² RHTI24 Index		
	Min.	Max.
C1	7 s	< 20 s
C2	20 s	< 50 s
C3	50 s	< 95 s
C4	95 s	

Molten aluminium splash		
	Min.	Max.
D1	100 g	< 200 g
D2	200 g	< 350 g
D3	350 g	

Molten iron splash		
	Min.	Max.
E1	60 g	< 120 g
E2	120 g	< 200 g
E3	200 g	

Contact heat (250°C)		
	Min.	Max.
F1	5 s	< 10 s
F2	10 s	< 15 s
F3	>15 s	

This clothing is not intended for use as firefighting clothing! This is not aluminised heat-reflective clothing!

In the event of fire or exposure to flames, distance yourself as quickly as possible from the flame / heat source. Protection is no longer guaranteed after serious damage. Dirt residues of flammable substances or certain chemicals on the clothing (e.g. oil, etc.) have an adverse effect on limited flame spread. In case of contamination with chemical or flammable liquids the user must leave the working environment immediately, take off the garment carefully such that the liquids do not come into contact with the skin, and have it laundered or taken out of use.

In case of contamination with molten metal the users must also leave the working environment and take off the garment since the clothing, if worn immediately next to the skin, cannot eliminate all risks of sustaining burns! Pocket flaps, etc. must be closed in order to eliminate any possibility of accumulation of molten metal in folds, pockets, etc.

Only those parts of the body covered by this P.P.E. are protected. In the clothing make-up, at least the entire body requires to be protected by [EN ISO 11612](#) P.P.E.

Where protection is provided by an outer two-piece suit, overlap of at least 20 cm shall

be maintained on a wearer when attempting to touch his/her toes with the fingertips while standing.

EN ISO 11611:2015

Protective clothing for welders and related processes



EN ISO 11611

Protective clothing with reference WEx, Ax

This type of protective clothing protects the parts of the body which it covers against minor molten metal spatter, momentary contact with flames, heat radiated from the arc and reduces the risk of electrocution due to brief accidental contact with live conductors (at voltages up to around 100 V DC) in normal welding conditions.

x = class 1 or 2. After class x, the label is also marked A1 or A2, or A1 + A2 (see [EN ISO 11612](#) for clarification)

x = **Class 1:** protection against less hazardous welding techniques and situations, with less risk of spatter and radiant heat:

- 15 drops of molten metal bring about a maximum temperature increase of 40°C on the inside of the garment.
- Radiant heat RHTI 24 index ≥ 7 s (see [EN ISO 11612](#) for clarification).

x = **Class 2:** protection against more hazardous welding techniques and situations, with greater risk of spatter and radiant heat:

- 25 drops of molten metal bring about a maximum temperature increase of 40°C on the inside of the garment.
- Radiant heat RHTI 24 index ≥ 16 s (see [EN ISO 11612](#) for clarification).

For recommendations regarding the correct choice of class of welding clothing based on classes, see website: <http://sio.to/eudoc>.

Weld spatter can, for example, adhere to exposed press-stud fasteners on sleeve narrowings. A flame retardant cuff of a glove can provide added thermal protection on the wrists. Additional P.P.E. with partial body protection may be necessary for overarm welding work for example. With a two-piece suit, both need to be worn with a minimum overlap of 20 cm. Damp clothing (due to rain or perspiration, etc.) can further reduce its limited electrical insulation. Precautions require to be taken for welding work in confined spaces or if the atmosphere is oxygen-enriched, which diminishes protection against flames. Protection can be reduced if garments are contaminated with flammable materials. This clothing does not necessarily protect against major metal spatter originating from foundry work. If you are experiencing sunburn-like symptoms, then it is likely to be due to UVB penetration that indicate damage (P.P.E. to be repaired or replaced).

Selection criteria for clothing for use in welding or allied processes (reference points)

Type of welders' clothing	Selection criteria relating to the process	Selection criteria relating to the environmental conditions
Class 1	Manual welding techniques with light formation of spatters and drops, e.g.: <ul style="list-style-type: none"> - Gas welding ; - TIG welding ; - MIG welding ; (with low current) ; - micro plasma welding ; - brazing ; - spot welding ; - MMA welding (with rutile-covered electrode). 	Operations of machines, e.g.: <ul style="list-style-type: none"> - oxygen cutting machines ; - plasma cutting machines ; - resistance welding machines ; - machines for thermal spraying ; - bench welding.
Class 2	Manual welding techniques with heavy formation of spatters and drops, e.g.: <ul style="list-style-type: none"> - MMA welding (with basic or cellulose-covered electrode) ; - MAG welding (with CO₂ or mixed gases) ; - MIG welding (with high current) ; - self-shielding flux cored arc welding ; - plasma cutting ; - gouging ; - oxygen cutting ; - thermal spraying. 	Operation of machines, e.g.: <ul style="list-style-type: none"> - in confined spaces ; - at overhead welding/ cutting or in comparable constrained positions.

IEC 61482-2:2018

Live working - Protective clothing against the thermal hazards of an electric arc



IEC 61482-2
Class x

Protective clothing with reference EA_x and/or ELIM

APC = class 1 or 2

and/or ELIM value (cal/cm²)

This P.P.E. protects against thermal hazards only, not against electrocution(!), noise, UV emission, splinters or fragments flying at high speed, hot oil, the consequences of physical and mental shock and any toxic effects that could be associated with an accidental arc! This clothing is not fire-fighting clothing either!

This clothing and the fabrics/layers that make it up have been tested in laboratory conditions in accordance with standard IEC 61482-1-2: 'Determination of arc protection class of material and clothing by using a constrained and directed arc (box test)': test conditions: 400 V, 50 Hz, arc duration 500 ms, distance between the electrode the sample 30 cm, electrode gap 3 cm and consists of 2 classes (protection against second-degree burns):

Electric arc current

- Class 1: 4 kA⁽¹⁾
- Class 2: 7 kA⁽¹⁾

The clothing can also undergo additional testing optionally and for information in accordance with the IEC 61482-1-1 test method with an 'open electric arc': test conditions: Electric arc current 8 kA, 50 Hz, arc duration variable (e.g. 0.2 s to 2 s) in order to determine max. incident energy, distance between the electrode the sample 30 cm, electrode gap 30 cm, which yields the following information: ATPV and/or EBT50 and/or ELIM:

- **ATPV** (Arc Thermal Performance Value): is to be calculated as a 50% likelihood that the heat transfer (from the incident arc energy in cal/cm²) reaches the Stoll curve through the fabric structure (criterion for 2nd-degree burn occurring).
- **EBT50** (Break-open Threshold Energy) value: the incident arc energy in cal/cm² where there is a 50% likelihood that the fabric structure of the P.P.E. will not break open.
- **ELIM** (Incident Energy Limit) value: average of the 3 highest measured incident arc energy values (in cal/cm²) without reaching the second-degree burn criterion but lower than the lowest measured value of incident arc energy where the second-degree burn criterion was actually reached.

In order to afford complete protection, the clothing is required to cover the body completely, to be fully fastened and used in combination with other appropriate P.P.E. (trousers or jacket, face protector, helmet, gloves, footwear). Garments such as T-shirts, underwear, etc. made of melting fibres (e.g. polyamide, polyester, etc.) must not be used.

EN 61482-2:2020

Live working - Protective clothing against the thermal hazards of an electric arc

Protective clothing with reference EA_x and/or ELIM

APC = class 1 or 2

and/or ELIM value (cal/cm²)

This P.P.E. protects against thermal hazards **only**, **not against electrocution(!)**, noise, UV emission, splinters or fragments flying at high speed, hot oil, the consequences of physical and mental shock and any toxic effects that could be associated with an accidental arc! This clothing is not fire-fighting clothing either!

This clothing and the fabrics/layers that make it up have been tested in laboratory conditions in accordance with standard IEC 61482-1-2: 'Determination of arc protection class of material and clothing by using a constrained and directed arc (box test)': test conditions:



EN 61482-2
Class x

400 V, 50 Hz, arc duration 500 ms, distance between the electrode the sample 30 cm, electrode gap 3 cm and consists of 2 classes (protection against second-degree burns):

Electric arc current

- Class 1: 4 kA⁽⁷⁾
- Class 2: 7 kA⁽⁷⁾

The clothing can also undergo additional testing optionally and for information in accordance with the IEC 61482-1-1 test method with an 'open electric arc': test conditions: Electric arc current 8 kA, 50 Hz, arc duration variable (e.g. 0.2 s to 2 s) in order to determine max. incident energy, distance between the electrode the sample 30 cm, electrode gap 30 cm, which yields the following information: ATPV and/or EBT50 and/or ELIM:

- **ATPV** (Arc Thermal Performance Value): is to be calculated as a 50% likelihood that the heat transfer (from the incident arc energy in cal/cm²) reaches the Stoll curve through the fabric structure (criterion for 2nd-degree burn occurring).
- **EBT50** (Break-open Threshold Energy) value: the incident arc energy in cal/cm² where there is a 50% likelihood that the fabric structure of the P.P.E. will not break open.
- **ELIM** (Incident Energy Limit) value: average of the 3 highest measured incident arc energy values (in cal/cm²) without reaching the second-degree burn criterion but lower than the lowest measured value of incident arc energy where the second-degree burn criterion was actually reached.

In order to afford complete protection, the clothing is required to cover the body completely, to be fully fastened and used in combination with other appropriate P.P.E. (trousers or jacket, face protector, helmet, gloves, footwear). Garments such as T-shirts, underwear, etc. made of melting fibres (e.g. polyamide, polyester, etc.) must not be used.

EN 13034:2005 +A1:2009

Protective clothing against liquid chemicals; limited protection Type 6 or PB [6]



EN 13034

Protective clothing with reference CHLST (see label)

Limited protection means the lowest level of chemical protection, intended only to protect against potential exposure to small quantities of spray or accidental splashes of less hazardous chemicals (against which a type 3 or 4 complete fluid permeability barrier (at molecular level) is not required).

Type 6 suits protect at least the torso and limbs (e.g. one-piece coveralls or two-piece suits, etc.). This P.P.E. has undergone a modified (mist) spray resistance test on the complete garment (including closures).

Partial Type PB [6] body protection only covers and protects specific parts of the body. This clothing (e.g. only a jacket, trousers, apron, sleeve, etc.) has not undergone a modified light spray resistance test (mist test).

A minimum of class 1 must be attained for all the requirements set out below, except liquid repellence and penetration in which you need to attain a minimum of class 3 and class 1, respectively, for at least one chemical product.

	Class attained	Explanation of classes					
		1	2	3	4	5	6
Abrasion resistance (cycles)	01	> 10	> 100	> 500	>1000	> 1500	> 2000
Tear resistance (N)	02	> 10	> 20	> 40	>60	> 100	> 150
Puncture resistance (N)	03	> 5	> 10	> 50	>100	> 150	> 250
Tensile strength (N)	04	> 30	> 60	> 100	>250	> 500	> 1000
Tensile strength of seams (N)	05	> 30	> 50	> 75	>125	> 300	> 500

	Class attained		Liquid chemicals					
			Repellence (R)			Penetration (P)		
Chemical product ($\pm 20^{\circ}\text{C}$)	R	P	1	2	3	1	2	3
H2SO4 30% (sulphuric acid)	08	12	> 80%	> 90%	> 95%	< 10%	< 5%	< 1%
NaOH 10% (sodium hydroxide)	09	13						
O-Xylene	10	14						
Butan-1-ol	11	15						

Damaged clothing (in which the fabric is torn, perforated, delaminated) does not afford adequate protection. Use and care (laundering) reduces liquid repellence as a result of which we recommend re-applying the water and dirt-repellent finish at each laundry cycle. (See website: <http://sio.to/eudoc>).

EN 510

Risk of entanglement with moving parts



EN 510

Protective clothing with RO item code

Protective clothing that reduces the risk of entanglement with moving machinery - or parts thereof - for wearers who work in the vicinity of machinery or equipment with hazardous moving parts.

With a 2-piece P.P.E. suit, it requires to be worn together and there must be no gaps occurring between the jacket and trousers as a result of body movements. This clothing must be worn as far as possible fitted/close to the body and be closed completely.

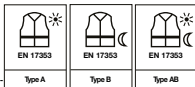
Clothing capable of signaling the user's presence visually

This clothing does not meet the requirements and is not in accordance with [EN ISO 20471](#).



EN 17353:2020

This clothing makes the user stand out where visibility is poor in medium-risk situations



This clothing is intended for medium risk situations depending on the task related risk analysis: significantly reduced traffic speeds (≤ 60 km/hr active road users or ≤ 15 km/hr for passive road users) and/or reduced traffic density. It is not intended for high-risk situations which are covered by [EN ISO 20471](#).

The presence of a fluorescent base material and/or retroreflective strips signals your presence in daylight or in the dark (in the light from headlamps) respectively.

Protective clothing with reference MRVx

x (See label)	type	Fluorescent (m ²)	Retroreflective (m ²)	Combined material (m ²)
Type B2	Dark conditions - limbs	/	≥ 0.018	/
Type B3	Dark conditions - on torso or torso and limbs	/	$\geq 0.08^*$	/
Type A	Daylight	$\geq 0.24^*$	/	/
Type AB	Daylight, twilight and dark conditions	$\geq 0.24^*$	$\geq 0.08^*$	$\geq 0.24^*$

(*) For height > 140 cm

The garment must be fully closed and must not be covered in order to ensure visibility.

Visibility is dependent on use (e.g. soiling, etc.) care (repairs, cleaning, etc.) and storage (to be stored preferably in a dark environment). The maximum permissible number of care cycles is shown on the label as 'Max xx' (this is an indication of the number of laundry cycles after which certification has been carried out) but this is not the only factor that will determine the lifespan of the garment. The lifespan will also depend on use, care, storage conditions, etc. Caution is advised when laundering together with other dark garments (risk of colourstaining). Wash together with similar colours. Any alterations of the product such as printing of logos may compromise the minimum areas and performance of the product. After exposure to light, the colour may fall in a different colour area from the original, however the colour will then still comply with [EN 17353](#).



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